Mississippi Assessment Program (MAP)

Mathematics, Grades 3-8

Blueprint Interpretive Guide

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Mississippi Assessment Program
Mathematics, Grades 3-8 Blueprint Interpretive Guide

A Joint Publication

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1.0 Purpose Statement

Test blueprints contain information about individual tests, including the number of test items and the number of points for each test item. In addition, test blueprints identify the number of test item types: performance task (PT), closed-ended, and open-ended. Blueprints serve as a guide for test developers to create/select test questions and construct test forms. They are used throughout the life cycle of the testing program to design the test forms for each administration.

1.1 Blueprint Design Overview

The Mississippi Assessment Program Blueprint (Appendix A) for the 2016-17 Mathematics, Grades 3-8 Assessment details the alignment of the 2016 Mississippi College- and Career-Readiness Standards for Mathematics (Appendix B) and the assessment. The standards are divided into domains:

- Operations and Algebraic Thinking (Grades 3-5);
- Numbers and Operations in Base Ten (Grades 3-5);
- Numbers and Operations—Fractions (Grades 3-5);
- Measurement and Data (Grades 3-5);
- Ratios and Proportional Relationships (Grades 6-7);
- The Number System, Expressions & Equations, Geometry, Statistics & Probability (Grades 6-8);
- Functions (Grade 8).

The grades 3-8 mathematics domains transition to the high school conceptual categories of Number and Quantity, Algebra, Functions, Modeling, Geometry, and Statistics & Probability.

Under each of these domains, the Blueprint delineates which standards will be measured. The Blueprint includes the item types that will appear on the assessment. The Blueprint details a numerical range of items that will appear per domain and provides a numerical range of items per standard and item type. Additionally, more detailed information about the MAP assessment can be found in the MAP Technical Guide.

Table 1.2 Interpreting the Blueprints

	Column A	Column B	Column C	Column D	Column E	Column F
Row # 1	**Domaian and Standard**	**Performance Task (PT)**	**Closed-ended**	**Open-ended**	**Total #Items**	**Total #Pts.**
Row # 2	***Operations and Algebraic Thinking (OA)***	***0***	***14–16***	***2–4***	***18***	***19***
Row # 3	**3.OA.1**-Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each.	0	1–2	1–2	1–4	

- Row # 1 includes
  - Headings that indicate the domain and standard,
  - Item type,
    - performance tasks,
    - closed-ended items, and
    - open-ended items.
  - Total number of items, and
  - Total number of points.
- Row # 2 identifies
  - the domain
    - delineated by bold and italicized print.
- Row # 3 identifies
  - the standard,
  - the numerical range of performance tasks,
  - closed-ended items,

- open-ended items per standard, and
- the total number of points assessed per standard.

- Column A identifies
  - domain, and
  - individual standard to be assessed.
- Columns B-D
  - detail the numerical range of items per item type that will appear on the assessment.
- Column E
  - provides the reader with the numerical range of total items per standard.
- Column F
  - provides a total number of points per strand only because the total number of points per standard is dependent upon how many items appear per standard.

1.3 Total Number of Points

The total number of items and the total number of points assessed per standard and strand are different because items are worth either one point or two points. Items that require students to complete a single interaction per item are worth one point. For example, a closed-ended item with a single interaction where students select one answer from four possible answer choices is worth one point. Furthermore, items that require students to complete two or more interactions per item will be worth two points. For example, an open-ended, multiple choice item with a Part A and a Part B requires students to complete two interactions by choosing an answer to Part A and then choosing another answer to Part B. This is worth two points. Similarly, an open-ended, technology- enhanced item where students drag-and-drop responses into a table and students are required to complete multiple interactions in the item is worth two points. Partial credit is available for all two-point items.

1.4 Item Types

1.4.1 Performance Task

The Mathematics, Grades 3-8 End-of-Course performance task will give students the

opportunity to demonstrate their knowledge, precision, interpretation skills, and conceptual understanding in a measurable format related to creating, analyzing, and using functions to model real world phenomena.

1.4.2 Closed-Ended Items

1.4.2(a) Multiple-Choice Static (MC) and Multiple-Choice Multi-Select (MCMS)

Multiple-choice items are an efficient way to assess knowledge and skills, and they can be developed to measure each of the cognitive targets. In a well-designed multiple-choice item, the stem clearly presents the question to the student. The stem may be in the form of a question, a phrase, or an expression, as long as it conveys what is expected of the student. The stem is followed by four (or more for multi-select) answer choices, or options, only one of which is correct. For multi-select there are multiple keys in the options.

1.4.2(b) Multiple-Choice Dynamic (MCD)

A multiple-choice item that uses drop-down boxes for the student to select the answer choice(s). The dropdown box can be inline text or standalone. The item can include multiple drop-down boxes.

1.4.3 Open-Ended Items

1.4.3(a) Multi-select table (MST)

The student indicates their answer by clicking on an open cell. Clicking again will remove the "blue checkmark". The number of "blue checkmarks" can be restricted by row or column. It is also possible to have no restrictions so that the student can choose every cell.

1.4.3(b) Select Text (ST)

Select-text items are essentially a type of multiple-choice item that allows the selection of one or more text strings that are in the context of a larger piece of text. A text string could be a word, phrase, sentence or paragraph. In the select text item type, selectable text will be indicated by a change in appearance as the student hovers over the text with the mouse.

1.4.3(c) Graphing – Line Graphs (GL)

The student can place points on the coordinate grid and create a line. In addition, the student has the option for shading any section delineated by the drawn line by clicking on the shading button and then selecting the space on the grid to be shaded.

1.4.3(d) Drag-and-Drop (DD)

The student can drag and drop-items and place them in specified drop zones. The drag objects can be dragged only once or multiple times depending upon the item's configuration. It is possible to have the drop zones to be configured along a number line, in buckets, or in a graphic.

1.4.3(e) Graphing – Bar Graphs (GB)

The student will input information that will create bar graphs of data listed in the stimulus. Students will be able to add a bar for a single bar graph or add a bar pair for a double bar graph. Students will also be able to set bars to correct heights or lengths.

1.4.3(f) Matching (M)

In the matching interaction type, the student draws lines to connect objects in two or three sets (composed of either text or images).

1.4.3(g) Two-Part (2P)

Two-part items consist of two standard response items. The student answers Part 1 first and then answers Part 2.

1.4.3(h) Type-in-Text (T)

In a Type-in-Text item, the student enters a response into a clearly defined region using the keyboard.

2.0 Conceptual Categories and Standards

The Blueprints for the Mathematics, Grades 3-8 assessment indicate a numerical range of items that will be written to each content standard. However, some standards have a higher numerical range than others while some standards have a 0 count. The numerical range for each

content standard was determined by a committee of Mississippi math educators. This committee utilized their expertise to determine the priority of each standard. Standards were identified as 1st priority (top priority), 2nd priority, 3rd priority, or standards that should be "assessed in the classroom". This prioritization was used to determine the numerical range of items that would appear on the assessment.

The Blueprints indicate the numerical ranges of items written to measure student understanding of the following mathematics domains:

- Operations and Algebraic Thinking (Grades 3-5);
- Numbers and Operations in Base Ten (Grades 3-5);
- Numbers and Operations—Fractions (Grades 3-5);
- Measurement and Data (Grades 3-5);
- Ratios and Proportional Relationships (Grades 6-7);
- The Number System, Expressions & Equations, Geometry, Statistics & Probability (Grades 6-8);
- Functions (Grade 8).

Instruction in these domains should be designed to expose students to experiences, which reflect the value of mathematics, to enhance students' confidence in their ability to do mathematics, and to help students communicate and reason mathematically.

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Appendix A

Mathematics, Grades 3-8 Blueprints

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Third Grade Mathematics Blueprint

Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
Operations and Algebraic Thinking (OA)	***0***	***14–16***	***2–4***	***18***	***19***
3.OA.1-Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each.	0	1–2	1–2	2–4	
3.OA.2-Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each.	0	0–2	0–1	0–3	
3.OA.3-Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	0	1–2	1–2	2–4	
3.OA.4-Determine the unknown whole number in a multiplication or division equation relating three whole numbers, with factors 0-10.	0	1–2	0–1	1–3	
3.OA.5-Apply properties of operations as strategies to multiply and divide.	0	1–2	0–1	1–3	
3.OA.6-Understand division as an unknown-factor problem, where a remainder does not exist.	0	1–2	0–1	1–3	
3.OA.7-<u>Fluently</u> multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers and fully understand the concept when a remainder does not exist under division.	0	1–2	0–2	2–4	
3.OA.8-Solve two-step word problems (two operational steps) using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. Include problems with whole dollar amounts.	0	1–3	0–2	2–5	
3.OA.9-Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations.	0	1–3	0–2	2–5	
Number and Operations in Base Ten (NBT)	***0***	***4–5***	***0–1***	***5***	***6***
3.NBT.1-Use place value understanding to round whole numbers to the nearest 10 or 100.	0	1–3	0–1	1–4	

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Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
3.NBT.2-<u>Fluently</u> add and subtract (including subtracting across zeros) within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction. Include problems with whole dollar amounts.	0	1–2	0–1	1–3	
3.NBT.3-Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.	0	1–2	0–1	1–3	
Number and Operations—Fractions (NF) *Limited to denominators* 2, 3, 4, 6, and 8.	***0***	***6–7***	***1–2***	***8***	***8***
3.NF.1-Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size 1/b.	0	2–3	0	2–3	
3.NF.2-Understand a fraction as a number on the number line; represent fractions on a number line diagram. a. Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size 1/b and that the endpoint of the part based at 0 locates the number 1/b on the number line. b. Represent a fraction a/b on a number line diagram by marking off a lengths 1/b from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.	0	2–3	0–2	3–5	
3.NF.3-Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. Recognize that comparisons are valid only when the two fractions refer to the same whole. b. Recognize and generate simple equivalent fractions, e.g., (1/2 = 2/4, 4/6 = 2/3). Explain why the fractions are equivalent, e.g., by using a visual fraction model. c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.	0	2–3	1–2	3–5	

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Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
Measurement and Data (MD)	***0***	***9–11***	***1–3***	***12***	***12***
3.MD.1-Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.	0	1–3	0–1	1–4	
3.MD.2-Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.	0	1–3	0–1	1–4	
3.MD.3-Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs.	0	1–3	0–1	1–4	
3.MD.4-Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.	0	1–3	0–1	1–4	
3.MD.5-Recognize area as an attribute of plane figures and understand concepts of area measurement. a. A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area. b. A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.	0	1–2	0–1	1–3	
3.MD.6-Measure areas by counting unit squares (square *cm*, square *m*, square *in*, square *ft.*, and improvised units).	0	1–2	0–1	1–3	

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Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
3.MD.7-Relate area to the operations of multiplication and addition. a. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths. b. Multiply side lengths to find areas of rectangles with whole-number side lengths (where factors can be between 1 and 10, inclusively) in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning. c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and b + c is the sum of a × b and a × c. Use area models to represent the distributive property in mathematical reasoning. d. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems. Recognize area as additive.	0	1–2	0–1	1–3	
3.MD.8-Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting (including, but not limited to: modeling, drawing, designing, and creating) rectangles with the same perimeter and different areas or with the same area and different perimeters.	0	1–3	0–1	1–4	
Geometry (G)	***0***	***2–3***	***0–1***	***3***	***3***
3.G.1-Understand that shapes in different categories (e.g., rhombuses, rectangles, circles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.	0	1–2	0–1	1–3	
3.G.2-Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.	0	1–2	0–1	1–3	

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Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
Fractional Modeling	***1***	***0***	***0***	***1***	***9***
3.NF.2-Understand a fraction as a number on the number line; represent fractions on a number line diagram. a. Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size 1/b and that the endpoint of the part based at 0 locates the number 1/b on the number line. **3.NF.3-**Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. Recognize that comparisons are valid only when the two fractions refer to the same whole. b. Recognize and generate simple equivalent fractions, e.g., 1/2 = 2/4, 4/6 = 2/3). Explain why the fractions are equivalent, e.g., by using a visual fraction model. d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model. **3.G.2-**Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.	1	0	0	1	9

Technical Note: For the Grade Three Mathematics performance task (fractional modeling), five (5) of the standards shall be used with one (1) performance task. The performance task is worth nine (9) points towards the overall mathematics score.

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Fourth Grade Mathematics Blueprint

Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
Operations and Algebraic Thinking (OA)	***0***	***8–9***	***1–2***	***10***	***10***
4.OA.1-Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.	0	2–3	0	2–3	
4.OA.2-Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.	0	2–3	0–1	2–4	
4.OA.3-Solve multistep word problems (two or more operational steps) posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.	0	2–3	0–1	2–4	
4.OA.4-Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.	0	1–2	0	1–2	
4.OA.5-Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.	0	1–2	0–1	1–3	
Number and Operations in Base Ten (NBT)	***0***	***8–10***	***1–3***	***11***	***12***
4.NBT.1-Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.	0	1–2	0–1	1–3	
4.NBT.2-Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	0	1–2	0–1	1–3	
4.NBT.3-Use place value understanding to round multi-digit whole numbers to any place.	0	1–2	0–1	1–3	

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Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
4.NBT.4-**Fluently** add and subtract (including across zeros) multi-digit whole numbers using the standard algorithm.	0	2–3	0–1	2–3	
4.NBT.5-Multiply a whole number of up to four digits by a one-digit whole number, and multiply two 2-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	0	2–3	0–1	2–3	
4.NBT.6-Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	0	1–2	0–1	1–3	
Number and Operations—Fractions (NF) *Limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100*	***0***	***9–11***	***1–3***	***12***	***13***
4.NF.1- Recognizing that the value of "n" cannot be 0, explain why a fraction a/b is equivalent to a fraction (n × a)/(n × b) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.	0	1–2	0–1	1–3	
4.NF.2-Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.	0	1–2	0–1	1–3	

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Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
4.NF.3-Understand a fraction a/b with a > 1 as a sum of fractions 1/b. a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions (including but not limited to: concrete models, illustrations, tape diagram, number line, area model, etc.) e.g., by using a visual fraction model. c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction. d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.	0	2–3	0–1	2–4	
4.NF.4-Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. a. Understand a fraction a/b as a multiple of 1/b. b. Understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a fraction by a whole number. c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem.	0	2–3	0–1	2–4	
4.NF.5-Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.	0	1–2	0–1	1–3	
4.NF.6-Use decimal notation for fractions with denominators 10 or 100.	0	1–2	0–1	1–3	
4.NF.7-Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model.	0	1–2	0–1	1–3	

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Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
Measurement and Data (MD)	***0***	***7–8***	***1–2***	***9***	***9***
4.MD.1-Know relative sizes of measurement units within one system of units including km, m, cm, mm; kg, g, mg; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36),…	0	1–2	0–1	1–3	
4.MD.2-Use the four operations to solve word problems involving • intervals of time • money • distances • liquid volumes • masses of objects including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.	0	1–2	0–1	1–3	
4.MD.3-Apply the area and perimeter formulas for rectangles in real world and mathematical problems.	0	1–2	0–1	1–3	
4.MD.4-Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots.	0	1–2	0–1	1–3	
4.MD.5-Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement: a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a “one degree angle,” and can be used to measure angles. b. An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees.	0	1–2	0–1	1–3	
4.MD.6-Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.	0	1–2	0–1	1–3	

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Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
4.MD.7-Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.	0	1–2	0–1	1–3	
Geometry (G)	***0***	***3–4***	***0–1***	***4***	***4***
4.G.1-Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.	0	1–2	0–1	1–3	
4.G.2-Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.	0	1–2	0–1	1–3	
4.G.3-Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.	0	1–2	0–1	1–3	

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Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
Angle Measurement	***1***	***0***	***0***	***1***	***9***
4.MD.5-Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement: a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one degree angle," and can be used to measure angles. b. An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees. **4.MD.6-**Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. **4.MD.7-**Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure. **4.G.1-**Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.	1	0	0	1	9
Technical Note: For the Fourth Grade Mathematics performance task (angle measurement), five (5) of the standards shall be used with one (1) performance task. The performance task is worth nine (9) points towards the overall mathematics score.					

Mississippi Assessment Program
Mathematics, Grades 3-8 Blueprint Interpretive Guide
Fifth Grade Mathematics Blueprint

Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
Operations and Algebraic Thinking (OA)	***0***	***4–5***	***1–3***	***7***	***7***
5.OA.1-Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.	0	1–2	0–1	1–3	
5.OA.2-Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.	0	1–2	0–1	1–3	
5.OA.3-Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.	0	2–4	0–1	2–5	
Number and Operations in Base Ten (NBT)	***0***	***11–12***	***1–2***	***13***	***14***
5.NBT.1-Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left. (e.g., "In the number 3.33, the underlined digit represents 3/10, which is 10 times the amount represented by the digit to its right (3/100) and is 1/10 the amount represented by the digit to its left (3)).	0	1–2	0–1	1–3	
5.NBT.2-Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.	0	1–2	0–1	1–3	
5.NBT.3-Read, write, and compare decimals to thousandths. a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000). **b.** Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	0	1–2	0–1	1–3	
5.NBT.4-Use place value understanding to round decimals to any place.	0	1–2	0–1	1–3	
5.NBT.5-<u>Fluently</u> multiply multi-digit whole numbers using the standard algorithm.	0	2–3	0–1	2–4	
5.NBT.6-Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	0	2–3	0–1	2–4	

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Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
5.NBT.7-Add, subtract, multiply, and divide decimals to hundredths, using concrete models (to include, but not limited to: base ten blocks, decimal tiles, etc.) or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	0	2–3	0–1	2–4	
Number and Operations—Fractions (NF)	***0***	***10–12***	***1–3***	***13***	***14***
5.NF.1-Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.	0	1–2	0–1	1–3	
5.NF.2-Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.	0	1–2	0–1	1–3	
5.NF.3-Interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem.	0	1–2	0–1	1–3	
5.NF.4-Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. a. Interpret the product (a/b) × q as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations a × q ÷ b. b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.	0	1–2	0–1	1–3	
5.NF.5-Interpret multiplication as scaling (resizing), by: a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence a/b = (n × a)/(n × b) to the effect of multiplying a/b by 1.	0	1–2	0–1	1–3	

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Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
5.NF.6-Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.	0	1–2	0–1	1–3	
5.NF.7-Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. b. Interpret division of a whole number by a unit fraction, and compute such quotients. c. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem.	0	1–2	0–1	1–3	
Measurement and Data (MD)	***0***	***5–6***	***1–2***	***7***	***7***
5.MD.1-Convert among different-sized standard measurement units within a given measurement system (customary and metric) (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.	0	1–2	0–1	1–3	
5.MD.2-Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots.	0	0–1	0–1	0–2	
5.MD.3-Recognize volume as an attribute of solid figures and understand concepts of volume measurement. a. A cube with side length 1 unit, called a “unit cube,” is said to have “one cubic unit” of volume, and can be used to measure volume. b. A solid figure which can be packed without gaps or overlaps using *n* unit cubes is said to have a volume of *n* cubic units.	0	1–2	0–1	1–3	
5.MD.4-Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.	0	1–2	0–1	1–3	

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Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
5.MD.5-Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication. b. Apply the formulas V = l × w × h and V = b × h for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems. c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.	0	1–2	0–1	1–3	
Geometry (G)	***0***	***4–5***	***1–2***	***6***	***6***
5.G.1-Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y- coordinate).	0	1–3	0–1	1–4	
5.G.2-Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.	0	1–3	0–1	1–4	
5.G.3-Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.	0	1–3	0–1	1–4	
5.G.4-Classify two-dimensional figures in a hierarchy based on properties.	0	1–3	0–1	1–4	

Mississippi Assessment Program
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Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
Measurement and Volume	***1***	***0***	***0***	***1***	***9***
5.NBT.5-<u>Fluently</u> multiply multi-digit whole numbers using the standard algorithm. **5.MD.1-**Convert among different-sized standard measurement units within a given measurement system (customary and metric) (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems. **5.MD.5-**Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.	1	0	0	1	9
Technical Note: For the Grade Five Mathematics performance task (measurement and volume), three (3) of the standards shall be used with one (1) performance task. The performance task is worth nine (9) points towards the overall mathematics score.					

Mississippi Assessment Program
Mathematics, Grades 3-8 Blueprint Interpretive Guide
Sixth Grade Mathematics Blueprint

Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
Ratios and Proportional Relationships (RP)	***0***	***7–8***	***1–2***	***9***	***9***
6.RP.1-Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.	0	1–2	0–2	2–4	
6.RP.2-Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0, and use rate language in the context of a ratio relationship.	0	1–2	0–2	2–4	
6.RP.3-Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. a. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios. b. Solve unit rate problems including those involving unit pricing and constant speed. c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent. d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.	0	1–4	1–2	2–6	
The Number System (NS)	***0***	***13–15***	***2–4***	***17***	***18***
6.NS.1-Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.	0	1–3	0–1	1–4	
6.NS.2-**Fluently** divide multi-digit numbers using the standard algorithm.	0	1–3	0–1	1–4	
6.NS.3-Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.	0	1–3	0–1	1–4	
6.NS.4-Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.	0	1–3	0–1	1–4	

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Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
6.NS.5-Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/ below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.	0	1–3	0–1	1–4	
6.NS.6-Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., -(-3) = 3, and that 0 is its own opposite. b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.	0	1–3	0–1	1–4	
6.NS.7-Understand ordering and absolute value of rational numbers. a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. c. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. d. Distinguish comparisons of absolute value from statements about order.	0	1–3	0–1	1–4	
6.NS.8-Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.	0	1–3	0–1	1–4	

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Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
6.NS.9-Apply and extend previous understandings of addition and subtraction to add and subtract integers; represent addition and subtraction on a horizontal or vertical number line diagram. a. Describe situations in which opposite quantities combine to make 0. b. Understand p + q as the number located a distance |q| from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of integers by describing real-world contexts. c. Understand subtraction of integers as adding the additive inverse, p – q = p + (–q). Show that the distance between two integers on the number line is the absolute value of their difference, and apply this principle in real-world contexts. d. Apply properties of operations as strategies to add and subtract integers.	0	1–3	0–1	1–4	
Expressions and Equations (EE)	***0***	***15–17***	***2–4***	***19***	***20***
6.EE.1-Write and evaluate numerical expressions involving whole-number exponents.	0	1–3	0–1	2–4	
6.EE.2-Write, read, and evaluate expressions in which letters stand for numbers. a. Write expressions that record operations with numbers and with letters standing for numbers. b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).	0	2–3	0–1	2–4	
6.EE.3-Apply the properties of operations to generate equivalent expressions.	0	1–3	0–1	2–4	
6.EE.4-Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).	0	2–3	0–1	2–4	
6.EE.5-Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.	0	2–3	0–1	2–4	

Mississippi Assessment Program
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Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
6.EE.6-Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.	0	2–3	0–1	2–4	
6.EE.7-Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.	0	2–3	0–1	2–4	
6.EE.8-Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.	0	2–3	0–1	2–4	
6.EE.9-Use variables to represent two quantities in a real-world problem that change in relationship to one another. • Write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. • Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.	0	1–2	0–1	1–3	
Geometry (G)	***0***	***4–5***	***1–2***	***6***	***6***
6.G.1-Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.	0	1–2	0–1	1–3	
6.G.2-Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = lwh$ and $V = bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.	0	1–2	0–1	1–3	
6.G.3-Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.	0	1–2	0–1	1–3	
6.G.4-Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real- world and mathematical problems.	0	1–2	0–1	1–3	

Mississippi Assessment Program
Mathematics, Grades 3-8 Blueprint Interpretive Guide

Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
Statistics and Probability (SP)	***0***	***5–6***	***1–2***	***7***	***7***
6.SP.1-Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.	0	0–2	0–1	0–3	
6.SP.2-Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.	0	0–2	0–1	0–3	
6.SP.3-Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.	0	0–2	0–1	0–3	
6.SP.4-Display numerical data in plots on a number line, including dot plots, histograms, and box plots.	0	0–2	0–1	0–3	
6.SP.5-Summarize numerical data sets in relation to their context, such as by: a. Reporting the number of observations. b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement. c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.	0	0–2	0–1	0–3	

Mississippi Assessment Program
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Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
Statistical Analysis	***1***	***0***	***0***	***1***	***12***
6.SP.3-Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number. **6.SP.5-**Summarize numerical data sets in relation to their context, such as by: a. Reporting the number of observations. c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.	1	0	0	1	12
Technical Note: For the Grade Six Mathematics performance task (statistical analysis), four (4) of the standards shall be used with one (1) performance task. The performance task is worth twelve (12) points towards the overall mathematics score.					

Mississippi Assessment Program
Mathematics, Grades 3-8 Blueprint Interpretive Guide
Seventh Grade Mathematics Blueprint

Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
Ratios and Proportional Relationships (RP)	***0***	***6–7***	***1–2***	***8***	***8***
7.RP.1-Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.	0	2–3	0–1	2–4	
7.RP.2-Recognize and represent proportional relationships between quantities. a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin. b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. c. Represent proportional relationships by equations. d. Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, r) where r is the unit rate.	0	2–3	0–1	2–4	
7.RP.3-Use proportional relationships to solve multistep ratio and percent problems.	0	2–3	0–1	2–4	
The Number System (NS)	***0***	***8–9***	***1–2***	***10***	***10***
7.NS.1-Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. a. Describe situations in which opposite quantities combine to make 0. b. Understand p + q as the number located a distance |q| from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts. c. Understand subtraction of rational numbers as adding the additive inverse, p – q = p + (–q). Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts. d. Apply properties of operations as strategies to add and subtract rational numbers.	0	1–3	0–1	1–4	

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Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
7.NS.2-Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (–1)(–1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts. b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then -(p/q) = (-p)/q = p/(-q). Interpret quotients of rational numbers by describing real-world contexts. c. Apply properties of operations as strategies to multiply and divide rational numbers. d. Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.	0	1–3	0–1	1–4	
7.NS.3-Solve real-world and mathematical problems involving the four operations with rational numbers.	0	1–3	0–1	1–4	
Expressions and Equations (EE)	***0***	***9–11***	***1–3***	***12***	***12***
7.EE.1-Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.	0	1–3	0–1	2–4	
7.EE.2-Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.	0	2–3	0–1	2–4	
7.EE.3-Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.	0	3–4	0–1	3–5	

Mississippi Assessment Program
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Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
7.EE.4-Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms **fluently**. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. b. Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.	0	3–4	0–1	3–5	
Geometry (G)	***0***	***10–12***	***1–3***	***13***	***13***
7.G.1-Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	0	1–2	0–1	1–3	
7.G.2-Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.	0	1–2	0–1	1–3	
7.G.3-Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.	0	1–2	0–1	1–3	
7.G.4-Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.	0	2–3	0–1	2–4	
7.G.5-Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.	0	2–3	0–1	2–4	
7.G.6-Solve real-world and mathematical problems involving area, volume and surface area of two and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.	0	2–3	0–1	2–4	

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Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
Statistics and Probability (SP)	***0***	***12–14***	***1–3***	***15***	***17***
7.SP.1-Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.	0	1–2	0–1	1–3	
7.SP.2-Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.	0	1–2	0–1	1–3	
7.SP.3-Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.	0	1–2	0–1	1–3	
7.SP.4-Use measures of center and measures of variability (i.e. inter-quartile range) for numerical data from random samples to draw informal comparative inferences about two populations.	0	1–2	0–1	1–3	
7.SP.5-Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	0	1–2	0–1	1–3	
7.SP.6-Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.	0	1–2	0–1	1–3	
7.SP.7-Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy. a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.	0	1–2	0–1	1–3	

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Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
7.SP.8-Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. b. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., “rolling double sixes”), identify the outcomes in the sample space which compose the event. c. Design and use a simulation to generate frequencies for compound events.	0	1–2	0–1	1–3	

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Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
Proportional Relationships and Graphing	***1***	***0***	***0***	***1***	***12***
7.RP.2-Recognize and represent proportional relationships between quantities. b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. d. Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, r) where r is the unit rate.	1	0	0	1	12
Technical Note: For the Grade Seven Mathematics performance task (proportional relationships and graphing), two (2) of the standards shall be used with one (1) performance task. The performance task is worth twelve (12) points towards the overall mathematics score.					

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Eighth Grade Mathematics Blueprint

Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
The Number System (NS)	***0***	***4–5***	***1–2***	***6***	***6***
8.NS.1-Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.	0	1–3	0–1	1–4	
8.NS.2-Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2).	0	1–3	0–1	1–4	
Expressions and Equations (EE)	***0***	***13–15***	***2–4***	***17***	***18***
8.EE.1-Know and apply the properties of integer exponents to generate equivalent numerical expressions.	0	1–2	0–1	1–3	
8.EE.2-Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.	0	1–2	0–1	1–3	
8.EE.3-Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other.	0	1–2	0–1	1–3	
8.EE.4-Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.	0	1–2	0–1	1–3	
8.EE.5-Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.	0	1–3	0–1	1–4	
8.EE.6-Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b.	0	1–3	0–1	1–4	

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Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
8.EE.7-Solve linear equations in one variable. a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form x = a, a = a, or a = b results (where a and b are different numbers). b. Solve linear equations and inequalities with rational number coefficients, including those whose solutions require expanding expressions using the distributive property and collecting like terms.	0	2–3	0–1	2–4	
8.EE.8-Analyze and solve pairs of simultaneous linear equations. a. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously. b. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. c. Solve real-world and mathematical problems leading to two linear equations in two variables.	0	2–3	0–1	2–4	
Functions (F) *Function notation is not required in Grade 8.*	***0***	***9–11***	***1–3***	***12***	***12***
8.F.1-Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.	0	1–3	0–1	1–4	
8.F.2-Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	0	1–3	0–1	1–4	
8.F.3-Interpret the equation y = mx + b as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.	0	1–3	0–1	1–4	
8.F.4-Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.	0	1–3	0–1	1–4	

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Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
8.F.5-Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	0	1–3	0–1	1–4	
Geometry (G)	***0***	***13–15***	***2–4***	***17***	***18***
8.G.1-Verify experimentally the properties of rotations, reflections, and translations a. Lines are taken to lines, and line segments to line segments of the same length. b. Angles are taken to angles of the same measure. c. Parallel lines are taken to parallel lines.	0	1–2	0–1	1–3	
8.G.2-Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.	0	1–2	0–1	1–3	
8.G.3-Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	0	1–2	0–1	1–3	
8.G.4-Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.	0	1–2	0–1	1–3	
8.G.5-Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.	0	1–2	0–1	1–3	
8.G.6-Explain a proof of the Pythagorean Theorem and its converse.	0	1–2	0–1	1–3	
8.G.7-Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real world and mathematical problems in two and three dimensions.	0	1–2	0–1	1–3	
8.G.8-Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	0	1–2	0–1	1–3	
8.G.9-Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	0	1–2	0–1	1–3	

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Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
Statistics and Probability (SP)	***0***	***4–5***	***1–2***	***6***	***6***
8.SP.1-Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	0	0–2	0–1	0–3	
8.SP.2-Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.	0	0–2	0–1	0–3	
8.SP.3-Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.	0	0–2	0–1	0–3	
8.SP.4-Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables.	0	0–2	0–1	0–3	

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Standard	Performance Task (PT)	Closed-ended	Open-ended	Total #Items	Total #Pts.
Transformations in the Coordinate Plane	***1***	***0***	***0***	***1***	***12***
8.G.1-Verify experimentally the properties of rotations, reflections, and translations a. Lines are taken to lines, and line segments to line segments of the same length. b. Angles are taken to angles of the same measure. c. Parallel lines are taken to parallel lines. **8.G.2**-Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them. **8.G.3**-Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.*	1	0	0	1	12
Technical Note: For the Grade Eight Mathematics performance task (Transformations in the coordinate plane), five (5) of the standards shall be used with one (1) performance task. The performance task is worth twelve (12) points towards the overall mathematics score. *Dilations will not be assessed in the Eighth Grade performance task.					

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Appendix B

Mathematics, Grades 3-8 Standards

https://districtaccess.mde.k12.ms.us/curriculumandInstruction/Mathematics%20Resources/MS%20CCSSM%20Framework%20Documents/2016-MS-CCRS-Math.pdf

Calculator-Ruler-Protractor Policy

https://districtaccess.mde.k12.ms.us/studentassessment/Public%20Access/Statewide_Assessment_Programs/MAP-Mississippi%20Assessment%20Program/Calculator-Policy/MAP-Calculator-Ruler-Protractor-Policy-Revised-March-2016.pdf

Grade Level Appropriate Reference Sheets

https://districtaccess.mde.k12.ms.us/studentassessment/Public%20Access/Forms/AllItems.aspx?RootFolder=%2Fstudentassessment%2FPublic%20Access%2FStatewide%5FAssessment%5FPrograms%2FMAP%2DMississippi%20Assessment%20Program%2FAlgebra%2DReference%2DSheet

Scratch Paper Policy

https://districtaccess.mde.k12.ms.us/studentassessment/Public%20Access/Statewide_Assessment_Programs/MAP-Mississippi%20Assessment%20Program/Scratch-Paper-Policy/MAP%20Scratch%20Paper%20Policy.pdf